MATHEMAGIC

- NEVER 2 WITHOUT 3 -

Educational Goals

- Develop logic.
- Highlight the playful potential of mathematics.
- Make students aware of the conservation properties of parity in arithmetic operations.

Key Features of the Targeted Competencies

- To decode the elements of the situational problem
- To model the situational problem
- To apply different strategies to work out a solution
- To validate the solution
- To define the elements of the mathematical situation
- To mobilize mathematical concepts and processes appropriate to the given situation

Concepts Used

- Arithmetic operations (multiplication)
- Properties of natural numbers (parity)

Materials

- Magic trick video
- Two objects per team
- 5 tokens per team (you may also use playing cards or pieces of cardboard)
- Paper and pencil

Targeted Academic Levels
Grades 3 to 6

Mathematical Field Concerned

Suggested Teaching Method

Time Required
Approximately 40 minutes

SUGGESTED PROCESS

Step 1: Introduction (5 minutes)

Play the magic trick video once (www.amazingmaths.ulaval.ca).

If you prefer to do the magic trick instead of playing the video, refer to the *Never 2 without 3* Explanation Sheet available online.

Step 2: Recreate the Magic Trick and Find the Solution (30 minutes)

Place the students in groups of three: one plays the role of the magician and the other two will play the role of the spectators. They must recreate the manipulations conducted in the video. To do this, present the video again a few more times so that the students realize and take note of the magician's manipulations.

If they do not understand how the trick works or the strategy that the magician used to reach the correct answer, they will not be able to perform the trick entirely. However, you may encourage them to try out different scenarios: the number of tokens can be multiplied by different even and odd numbers. Guide their reasoning by asking them to do the other possible multiplications and to find the results. If they cannot, then ask them to observe the difference between the answers to the multiplication of an even number with the 2 and with the 3 more precisely.

This part consists of a bunch of trial and error but allows them to enter into a problem-solving procedure.

Step 4: Reveal the solution (5 minutes)

Refer to the *Never 2 without 3* Explanation Sheet.